

REMARKS

For the sake of completeness, Applicants enclose herewith a full listing of the claims.

Claims 1-9, 11-12, 14, and 18-19 were previously cancelled.

Claims 10, 13, 15, 16, and 17 were previously presented and currently pending.

However, claim 17 is withdrawn from consideration, as being directed to the non-elected invention. Upon allowance of the elected claims, rejoinder of this claim is again requested (MPEP § 821.04).

The rejection of Claim 10, 13, 15, and 16 under 35 U.S.C. § 112, first paragraph, as failing to comply with the written description requirement, is traversed.

The Office has stated that "it is unclear how merely surface cross-linking both faces of the polyolefin product results in the foam product expanding only in its thickness," and that "it is unclear how applicant achieves expansion in only one direction performing a method that is substantially the same as that taught by the prior art." The key here is that **the two methods are not the same**. Tsujimoto (JP 1992-213341) effects **partial cross-linking using low-energy** radiation.

Tsujimoto's method does not produce a foam whose expansion occurs essentially unidirectionally, because Tsujimoto's low-energy irradiation only results in partial crosslinking of the material. Since cross-linking occurs only to a partial extent, about 10-40%, Tsujimoto's product does not undergo essentially unidirectionally expansion, rather, expansion occurs both in the thickness and the width of the film. It is noted that there is 133% increase in the thickness and a 78% increase in the width upon expansion of Tsujimoto's foam, which corresponds to a 30-fold foaming expansion (p. 10; [0031]). This is not essentially unidirectional expansion.

The reason why Tsujimoto's material does not undergo essentially unidirectional expansion can be seen upon inspection of page 5 of Tsujimoto's disclosure. Specifically, the Examiner's attention is directed to paragraph [0011], which states that "the organic peroxide

in the surface layer is decomposed and its activity is eliminated" by irradiating the material with a **low-voltage electron beam of 50-400 keV**. This process gives rise to only partial crosslinking of the surface such that "the degree of cross-linking [is] usually 10-40% in terms of gel fraction." Thus, Tsujimoto's foam does not undergo essentially unidirectionally foaming.

This should be compared with the method that is claimed herein in which essentially unidirectional expansion occurs by blocking expansion in two of the three possible directions (p. 3, ll. 25-27). This may be achieved, as described in the present specification, by either one of two methods.

First, the intermediate polyolefin product can be adhered to a support (or substrate), such that when the material is expanded the adhesion between the intermediate product and the support **blocks** coplanar expansion of the intermediate product (or resultant foam); wherein the plane is defined by the face of the intermediate polyolefin product to be expanded.

Second, essentially unidirectional expansion may be promoted by cross-linking the surface on the intermediate product. The Examiner's attention is directed to page 4, lines 20-28 and page 5, lines 15-24. In the second method surface cross-linking occurs by: **high-energy irradiation**, spraying of reagents, application of light radiation or corona discharge, or raising the temperature. Crosslinking a face of the polyolefin intermediate product to be expanded blocks the coplanar expansion of the polyolefin intermediate product to be expanded; wherein the plane is defined by the face of the polyolefin intermediate product to be expanded.

Thus, it is apparent that the methods disclosed herein result in essentially unidirectional expansion, while that method disclosed by Tsujimoto does not. Therefore, it is kindly requested that the Examiner withdraw this rejection.

In a like manner, the rejection of Claims 10, 13, 15, and 16 under 35 U.S.C. § 112, first paragraph, as failing to comply with the enablement requirement, is traversed.

The Examiner's attention is directed to the above-mentioned comments which clearly describe how essentially unidirectional expansion can be realized using an expandable polyolefin intermediate product. Therefore, it is requested that the Examiner upon consideration of these comments the Examiner withdraw this rejection.

Furthermore, the rejections of Claims 10 and 15 under 35 U.S.C. § 102(b), as being anticipated by Tsujimoto is traversed.

As noted above, Tsujimoto does not describe a method that can provide essentially unidirectional foaming. Since Tsujimoto's method uses low-energy radiation, there is only partial cross-linking, and thus, there can be no essentially unidirectional expansion of an intermediate polyolefin product. Tsujimoto does not describe a method wherein essentially unidirectional expansion of the foam occurs only in its thickness. This is evidenced by the data presented above; wherein a 30-fold foaming expansion is realized upon expanding the polyolefin product (page 10, [0031]). This is in contrast to that which is claimed herein. Thus, it is requested that the Examiner withdraw this rejection.

Moreover, the rejection of Claim 13 under 35 U.S.C. § 103(a) as being unpatentable over Tsujimoto in view of Hitchcock (U.S. Patent 5,087,395) is traversed.

The combined references do not describe expanding in an essentially unidirectional manner. As noted above, Tsujimoto does not describe a method for expanding a polyolefin foam in an essentially unidirectional manner. Furthermore, Hitchcock certainly does not describe essentially unidirectional expansion. In fact, Hitchcock's foaming method results in a similar 30-fold expansion (col. 5, ll 55-60); as described Tsujimoto. The two combined references do not disclose or describe a method for expanding foam in an essentially unidirectional manner. Therefore, it is requested that the Examiner withdraw this rejection.

Reply to Office Action of November 5, 2003

The rejection of Claim 16 under 35 U.S.C. § 103(a) as being unpatentable over Tsujimoto in view of Hurley (U.S. Patent 5,883,145) is traversed.

It is noted that the combined references do not describe a method wherein polyolefin foam is expanded in an essentially unidirectional manner. Like Tsujimoto and Hitchcock, Hurley does not describe a method for essentially unidirectional expansion of a foam. The Examiner's attention is directed to Hurley's Example 1 (col. 14, ll. 25-26 and 46); wherein expansion of a 9" wide by 0.069" thick sheet results in an expanded product whose width is 20" and whose thickness is 0.150". This is not essentially unidirectional expansion in the thickness alone. Thus, it is requested that the Examiner withdraw this rejection.

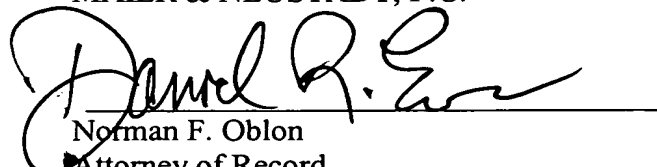
Finally, the rejection of claims 10, 13, 15, and 16 under 35 U.S.C. § 112, second paragraph, is traversed.

Applicants note that one of ordinary skill in the art would be able to determine the metes and bounds of the claimed invention and would know that "essentially unidirectional expansion" means. Applicants' specification provides clear examples as to the meaning of essentially unidirectional expansion. It is kindly requested that the Examiner withdraw this rejection.

In view of the above, it is believed that the claims are in a condition for allowance. An early and favorable indication is earnestly requested.

Respectfully submitted,

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